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09/898,527	07/03/2001	Matthew B. Wall	2767.2001-005	7543

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EXAMINER
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RUTTEN, JAMES D

ART UNIT	PAPER NUMBER
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2192

DATE MAILED: 02/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/898,527

Applicant(s)

WALL ET AL.

Examiner

J. Derek Rutten

Art Unit

2192

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. This action is responsive to Applicant's amendment dated 12/9/2005, responding to the 9/7/2005 Office action provided in the rejection of claims 1-12, wherein claim 1 has been amended. Claims 1-12 remain pending in the application and have been fully considered by the examiner.

2. Applicant has primarily argued that the claims are not anticipated by the Pahng or Chandy references because they do not disclose an emergent model describing the behavior of a modeled system through function objects that define interdependencies within a model by providing solvable expressions that relate data and function objects. Applicant's arguments have been fully considered but are not persuasive for the reasons set forth in the *Response to Amendment/Arguments* section below.

3. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

Art Unit: 2192

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Response to Amendment/Arguments***

4. Applicant's amendments to claim 1 have overcome the rejections under 35 U.S.C. §§ 101 and 112, 2<sup>nd</sup> paragraph. Therefore, these rejections have been withdrawn.

5. Applicant argues on page 8 of the response, that neither the Pahng nor Chandy references teach "an emergent model including one or more models that describe the behavior of a system being modeled and/or evaluate the system being modeled", or "generating function objects that define interdependencies within a model by providing solvable expressions that relate data objects and/or function objects." However, these arguments are not convincing. Pahng's models describe and/or evaluate the behavior of the system being modeled as indicated at least on page 3 column 2 paragraph 2 as well as the description of implementation found on pages 7-10. The description of behavior appears to be a fundamental attribute of any modeling system as described in the "Background of the Invention" section appearing on page 2 lines 5-7 of the originally filed specification:

Modeling is a process of describing the behavior of a system, possibly through the use of computers, such that the system's behavior can be predicted based upon varying inputs.

Pahng further discloses function objects that define interdependencies by providing solvable expressions relating the objects at least in Figure 12 and the related description on page 7. This appears to be an essential component of modules within a modeling environment as described on page 2 lines 7-8 of the originally filed specification:

Art Unit: 2192

Models can describe objects (entities) and their inter-relationships using mathematical equations. Thus, Applicant's arguments are not convincing, since Pahng appears to provide these required modeling components.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-7, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over prior art of record "Modeling and Evaluation of Product Design Problems in a Distributed Design Environment" by Pahng et al. (hereinafter "Pahng") in view of US Patent 6,898,791 in view of prior art of record U.S. Patent 6,898,791 to Chandy et al. (hereinafter "Chandy").

As per claim 1, Pahng discloses:

*A method for mapping business and engineering processes (page 1 "Abstract"), comprising the steps of:*

*giving users access to a system for generating an emergent model See page 1 column 2 paragraph 2:*

The DDE is a highly heterogeneous environment. Designers, engineering resources, **models and activities are not centralized** nor concentrated in one location, but rather are **distributed among many companies** and designers working together over computer networks.

See also page 3 column 1 paragraph 4:

The Distributed Object-based Modeling and Evaluation (DOME) framework proposed in this paper uses these principles to provide a flexible environment to model and evaluate design problems using modules and **distributed modules**.

See also Figure 3 on page 4 and Figure 11 on page 7. As mentioned on page 6 lines 25-28 of the specification, the reference exhibits the qualities of an emergent model:

distributed execution, storage and access.

*The emergent model including one or more models having computer instructions and data that describe behavior of a system being modeled and/or evaluate the system being modeled;* See page 3 column 2 paragraph 2:

Each component of the drill (e.g., motor, gearbox, drill chuck, etc.) can be viewed as a complete design problem. Design participants associated with these design problems might independently construct models for these problems. Figures 2(a) and (b) show how gearbox and gear design problems could be decomposed into modules, respectively.

Modules may contain both data and mathematical models. They can provide information about themselves or perform analyses given inputs from other modules. They provide services which evaluate their status. For example, within the spur gear design problem the cost module might provide cost estimates given geometric and material information

As shown in this passage, the behavior of the system is provided through the use of modules. A greater system can be decomposed into smaller systems and each component of the system provides a model that contributes to the greater modeled system. Each module provides the behavior for that particular component, and does so using “data and mathematical models”. Pahng modules must inherently contain computer instructions since they are implemented on a computer system as described on page 7. A module without computer instructions would be unable to provide functionality since they could then only be interpreted as data. Note that Pahng’s discussion of models appears to

Art Unit: 2192

coincide at least with the description of models provided on page 2 lines 5-15 of the originally filed specification.

*publishing, using a computing device, inputs and/or outputs of data objects*

*and/or function objects generated by the users* See page 4 column 1 paragraph 2:

It manufactures gears and, using its in-house mathematical modeling capabilities and software applications, **provides access** to modules...”

See also page 7 column 2 paragraph 4:

The relationships amongst modules specify how **outputs** of a module are connected to **inputs** of other modules.

See also page 4 column 2 paragraph 4:

The basic building block is the module. A module is capable of **performing calculations** and **providing information** through service calls invoked by its user.

Publishing inputs and/or outputs is inherent in the use of a module, otherwise an associated module would be unable to anticipate the type of data to submit or the kinds of results to expect. “Providing information” and “performing calculations” are equivalent to “data objects” and “function objects,” respectively.);

*at least some of the data objects and/or function objects being model inputs and/or model outputs, at least some of the function objects defining interdependencies within the one or more models by providing solvable expressions that relate data objects and/or function objects; See column 2 paragraph 3:*

Modules may contain both data and mathematical models. They can provide information about themselves or perform analyses given inputs from other modules. They provide services which evaluate their status. For example, within the spur gear design problem the cost module might provide cost estimates given geometric and material information

Art Unit: 2192

Also, see Figure 12 on page 7 and the related discussion including the example computer instructions which provide solvable expressions relating the modules (objects) on page 8 column 1:

```

Module "Module A" (
  Variable "Ax" ( Deterministic {EI. 0} )
  // this variable is a single value
  Variable "Ay"
  // the type of this variable is determined
  // by the system based upon the types it
  // depends upon
    Dependency "ax"
    Dependency "by"
    EmbeddedModel "calculateAy"
      ( Ay = 1/ ( 1 + log (ax) ) + by )
)
Module "Module B" (
  Variable "Bx" ( Beta {3, 2, 5, 8} )
  // this variable is a beta distribution
  Variable "By"
    Dependency "bx"
    EmbeddedModel "calculateBy"
      ( BY = pow(bx,3) 1
)
Design "simple problem" (
  Module "Module A"
  Module "Module B"
)

```

As shown in the above code segment, interdependencies (explicitly shown by each “Dependency” tag) between modules are defined in each module through the use of a solvable expression (shown below the “EmbeddedModel” tag) that provides an output for the module based on various inputs. Note that this interrelation of object using solvable expressions appears to coincide with the description of appearing on page 2 lines 7-8 of the originally filed specification.

*subscribing to the published inputs and/or outputs of data objects and/or function objects generated by the users from at least one computing device on a computer network through the system for generating an emergent model, thereby creating a network of*



*linked inputs and/or outputs of data objects and/or function objects* See page 4 column 1 paragraph 2:

These distributed design participants and their corresponding modules are **connected** through computer **networks**.

*analyzing and displaying, using a computing device, the network of linked inputs and/or outputs, resulting in a map of the business and engineering processes* See page 9 Figure 15. Analyzing is inherent in displaying the network, since the display needs to be able to connect various analyzed modules.

*wherein the network of linked inputs and/or outputs of data objects and/or function objects is created in a manner free of a central coordinating computing <module>* (See page 6 Figure 9(a)).

*wherein the data objects and/or function objects generated are used in business and engineering processes* See page 1 column 1 “Introduction”:

With the growing popularity of WWW-based browsers, many **manufacturing companies** are publishing their product information on the Internet. Some Internet-based companies are specialized in providing **design information** for machine part or component manufacturers.

While Pahng discloses a network of modules that is free of a central coordinating module (see Figure 9(a) as cited above), Pahng does not expressly disclose a network that is created in a manner free of a central coordinating computing device. However, in an analogous environment, Chandy teaches that peer to peer networks are created wherein there is no central computing device. See column 4 lines 35-37:

By contrast, in peer-to-peer systems, all programs in the system can behave as both clients and servers, able both to deliver and manipulate data.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Chandy’s teaching of peer-to-peer systems with Pahng’s network of

devices. One of ordinary skill would have been motivated to both deliver and manipulate data (see Chandy column 4 line 37), instead of being reliant on a central computing device.

As per claim 2, the above rejection of claim 1 is incorporated. Pahng further discloses: *wherein at least a part of the configuration of the network of linked inputs and/or outputs of data objects and/or function objects is predefined and used to determine which inputs and/or outputs are generated on which of the computing devices in the computer network* (page 3 column 1 last paragraph).

As per claim 3, the above rejection of claim 1 is incorporated. Pahng further discloses *wherein a user interface is defined that displays the data objects and/or function objects on a computing device on the computer network using a client process that communicates with a server process wherein the data objects and/or function objects can be viewed on any computing device connected to the computer network* (page 7 column 1 paragraph 3 discusses use of CORBA which inherently provides accessibility using a client/server model.; also page 10 column 1 paragraph 1 and Figure 17).

As per claim 4, the above rejection of claim 1 is incorporated. Pahng further discloses: *wherein the inputs and/or outputs are stored in logical groups* (Figure 3).

As per claim 5, the above rejection of claim 1 is incorporated. Pahng further discloses: *wherein references to the inputs and/or outputs are published using electronic media, print media or human conversation* (page 6 column 1 last paragraph).

As per claim 6, the above rejection of claim 1 is incorporated. Pahng further discloses: *wherein the step of generating the inputs and/or outputs provides an interface mapping for inputs and/or outputs stored in application programs, databases or computer code libraries* (Figure 11).

As per claim 7, the above rejection of claim 1 is incorporated. Pahng further discloses: *wherein the function objects are implemented by computer code that is compiled, dynamically linked and evaluated at runtime* (page 7 column 1 paragraph 2 discloses implementation in C++ which inherently provides code for compilation, dynamic linkage, and runtime evaluation.).

In regard to claim 9, the above rejection of claim 1 is incorporated. Pahng further discloses: *sending or receiving messages between the linked inputs and/or outputs of data objects and/or function objects* (page 5 column 1 paragraph 3 discloses module interaction in terms of compatible interfaces which include inputs and outputs. Sending and receiving messages is inherent in object-oriented system, otherwise objects could not communicate.).

As per claim 11, the above rejection of claim 1 is incorporated. Pahng does not expressly disclose read, write, execute and administrative permissions on a per input and/or output basis. However, Pahng further discloses future work including various levels of access control corresponding to different users of the system (page 11 column 1 paragraph 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use specific permission levels in Pahng's modeling system. One of ordinary skill would have been motivated to limit access to various modules to various users so intellectual property and security can be maintained.

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pahng and Chandy as applied to claim 1 above, and further in view of prior art of record "Web based collaborative visualization of distributed and parallel simulation" by Bajaj et al. (hereinafter referred to as "Bajaj").

As per claim 8, the above rejection of claim 1 is incorporated. Pahng does not expressly disclose code that is interpreted and evaluated at runtime. However, in an analogous environment, Bajaj teaches distributed execution of code that is interpreted and evaluated at runtime (page 51 column 1 paragraph 1: "Java"). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Bajaj's interpreted code in Pahng's modeling system. One of ordinary skill would have been motivated to develop code that is capable of running on a heterogeneous computer platform.

Art Unit: 2192

9. Claims 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pahng and Chandy as applied to claim 1 above, and further in view of prior art of record "Firewalls Complete" by Gonçalves (hereinafter referred to as "Gonçalves").

As per claim 12, the above rejection of claim 1 is incorporated. Pahng does not expressly disclose wherein the sending or receiving of messages can be enabled or disabled based on predefined criteria. However, in an analogous environment, Gonçalves teaches that messages can be examined based on various criteria and either be allowed or prohibited from further propagation (page 242 "Packet Filtering"). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the message filtering of Gonçalves in Pahng's message passing system. One of ordinary skill would have been motivated to prevent unauthorized users from accessing sensitive information.

As per claim 10, the above rejection of claim 12 is incorporated. Pahng does not expressly disclose wherein the criteria is based upon message source, message destination or message contents. However, in an analogous environment, Gonçalves teaches that messages can be filtered based on many criteria including message source (page 243 "Source IP address"). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the message filtering criteria of Gonçalves in Pahng's message passing system. One of ordinary skill would have been motivated to limit the

Art Unit: 2192

filtering of message only to those situations that require restriction, while allowing valid messages to pass through.


***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to J. Derek Rutten whose telephone number is (571) 272-3703. The examiner can normally be reached on T-F 6:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on (571) 272-3695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jdr

  
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SUPERVISORY PATENT EXAMINER